

I/WE CLAIM:

1. A method of monitoring resource utilization within a connection oriented switch, comprising the steps of:
 - a. providing at least one utilization threshold;
 - b. for each of a plurality of resources, each corresponding to one of the at least one utilization threshold, determining whether a utilization of the resource is above the corresponding utilization threshold; and
 - c. identifying each resource for which the utilization is above the corresponding utilization threshold.
2. The method of claim 1 wherein the plurality of resources includes at least one of bandwidth, line card capacity, number of connection end points per line card, Virtual Path Identifier numbers, Virtual Connection Identifier numbers, MultiProtocol Label Switching (MPLS) label numbers, memory within the switch, number of supportable leaf endpoints per system, number of supportable connections in a connecting state, number of MPSTL state blocks, and number of connections in a database.
3. The method of claim 1 further comprising the step of providing a list of resources, and wherein the step of determining whether a utilization of a resource is above the corresponding utilization threshold is carried out only with respect to resources within the list of resources.
4. The method of claim 3 wherein the step of providing at least one utilization threshold comprises receiving at least one utilization threshold from an operator.
5. The method of claim 1 further comprising the steps of:
 - a. generating a report including any identified resources; and
 - b. presenting the report to an operator.

6. The method of claim 5 wherein the step of providing at least one utilization threshold comprises receiving at least one utilization threshold from an operator.
7. The method of claim 5 wherein the step of generating a report further comprises including the utilization of any identified resources in the report.
8. The method of claim 7 further comprising the step of:
 - a. providing a list of resources, the list of resources including at least one of bandwidth, line card capacity, number of connection end points per line card, Virtual Path Identifier numbers, Virtual Connection Identifier numbers, MultiProtocol Label Switching (MPLS) label numbers, memory within the switch, number of supportable leaf endpoints per system, number of supportable connections in a connecting state, number of MPLS state blocks, and number of connections in a database;wherein the step of determining whether a utilization of a resource is above the corresponding utilization threshold is carried out only with respect to resources within the list of resources, and wherein the step of providing at least one utilization threshold comprises receiving at least one utilization threshold from an operator.
9. The method of claim 1 further comprising the steps of:
 - a. upon identification of a resource for which the utilization is above the corresponding utilization threshold, generating an alarm identifying the resource; and
 - b. presenting the alarm to an operator.

10. The method of claim 9 wherein the step of providing at least one utilization threshold comprises receiving at least one utilization threshold from an operator.
11. The method of claim 9 wherein the step of determining whether a utilization of a resource is above the corresponding utilization threshold and the step of identifying each such resource are carried out repeatedly.
12. The method of claim 11 further comprising the step of pausing after the step of identifying each resource for which the utilization is above the corresponding utilization threshold.
13. The method of claim 9 comprising the further step of:
 - a. monitoring for receipt of call connection establishment signals;and wherein the step of determining whether a utilization of a resource is above the corresponding utilization threshold and the step of identifying each such resource are carried out only upon receipt of a call connection establishment signal.
14. The method of claim 13 comprising the further step of:
 - a. determining whether an alarm has been generated since the utilization of the resource last rose above the corresponding utilization threshold;and wherein the step of generating an alarm is carried out only if an alarm has not been generated since the utilization of the resource last rose above the corresponding utilization threshold.
15. The method of claim 14 wherein the step of generating a report further comprises including the utilization of any identified resources in the report.
16. The method of claim 15 further comprising the step of:

- a. providing a list of resources, the list of resources including at least one of bandwidth, line card capacity, number of connection end points per line card, Virtual Path Identifier numbers, Virtual Connection Identifier numbers, MultiProtocol Label Switching (MPLS) label numbers, memory within the switch, number of supportable leaf endpoints per system, number of supportable connections in a connecting state, number of MPLS state blocks, and number of connections in a database;

wherein the step of determining whether a utilization of a resource is above the corresponding utilization threshold is carried out only with respect to resources within the list of resources, and wherein the step of providing at least one utilization threshold comprises receiving at least one utilization threshold from an operator.

17. A processor for monitoring resource utilization within a connection oriented switch, comprising:
 - a. instructions for providing at least one utilization threshold;
 - b. instructions for, for each of a plurality of resources, each resource having a corresponding one of the at least one utilization threshold, determining whether a utilization of the resource is above the corresponding utilization threshold; and
 - c. instructions for identifying each resource for which the utilization is above the corresponding threshold.

18. The processor claim 17 wherein the plurality of resources includes at least one of bandwidth, line card capacity, number of connection end points per line card, Virtual Path Identifier numbers, Virtual Connection Identifier numbers, MultiProtocol Label Switching (MPLS) label numbers, memory within the switch, number of supportable leaf endpoints per system, number of supportable connections in a connecting state, number of MPLS state blocks, and number of connections in a database.
19. The processor of claim 17 further comprising instructions for providing a list of resources, and wherein the instructions for determining whether a utilization of a resource is above the corresponding utilization threshold make this determination only with respect to resources within the list of resources.
20. The processor of claim 19 wherein the instructions for providing at least one utilization threshold comprise instructions for receiving at least one utilization threshold from an operator.
21. The processor of claim 17 further comprising:
 - a. instructions for generating a report including any identified resources; and
 - b. instructions for presenting the report to an operator.
22. The processor of claim 21 wherein the instructions for providing at least one utilization threshold comprise instructions for receiving at least one utilization threshold from an operator.
23. The processor of claim 21 wherein the instructions for generating a report further comprise instructions for including the utilization of any identified resources in the report.
24. The processor of claim 23 further comprising:

- a. instructions for providing a list of resources, the list of resources including at least one of bandwidth, line card capacity, number of connection end points per line card, Virtual Path Identifier numbers, Virtual Connection Identifier numbers, MultiProtocol Label Switching (MPLS) label numbers, memory within the switch, number of supportable leaf endpoints per system, number of supportable connections in a connecting state, number of MPLS state blocks, and number of connections in a database;

wherein the instructions for determining whether a utilization of a resource is above the corresponding utilization threshold are executed only with respect to resources within the list of resources, and wherein the instructions for providing at least one utilization threshold comprise instructions for receiving at least one utilization threshold from an operator.

25. The processor of claim 17 further comprising:

- a. instructions for, upon identification of a resource for which the utilization is above the corresponding utilization threshold, generating an alarm identifying the resource; and
- b. instructions for presenting the alarm to an operator.

26. The processor of claim 25 wherein the instructions for providing at least one utilization threshold comprise instructions for receiving at least one utilization threshold from an operator.

27. The processor of claim 25 further comprising instructions for executing the instructions for determining whether a utilization of a resource is above the corresponding utilization threshold and the instructions for identifying each such resource repeatedly.

28. The processor of claim 27 further comprising instructions for pausing after the instructions for identifying each resource for which the utilization is above the corresponding utilization threshold are executed.
29. The processor of claim 25 further comprising:
- a. instructions for monitoring for receipt of call connection establishment signals; and
 - b. instructions for executing the instructions for determining whether a utilization of a resource is above the corresponding utilization threshold and the instructions for identifying each such resource upon receipt of a call connection establishment signal.
30. The processor of claim 29 further comprising:
- a. instructions for determining whether an alarm has been generated since the utilization of the resource last rose above the corresponding utilization threshold; and
- instructions for executing the instructions for generating an alarm only in the event that an alarm has not been generated since the utilization of the resource last rose above the corresponding utilization threshold.
31. The processor of claim 30 wherein the instructions for generating a report further comprise instructions for including the utilization of any identified resources in the report.
32. The processor of claim 31 further comprising:

- a. instructions for providing a list of resources, the list of resources including at least one of bandwidth, line card capacity, number of connection end points per line card, Virtual Path Identifier numbers, Virtual Connection Identifier numbers, MultiProtocol Label Switching (MPLS) label numbers, memory within the switch, number of supportable leaf endpoints per system, number of supportable connections in a connecting state, number of MPLS state blocks, and number of connections in a database;

wherein the instructions for determining whether a utilization of a resource is above the corresponding utilization threshold are executed only with respect to resources within the list of resources, and wherein the instructions for providing at least one utilization threshold comprise instructions for receiving at least one utilization threshold from an operator.

- 33. A computer-readable medium comprising instructions for monitoring resource utilization within a connection oriented switch, comprising:
 - a. instructions for providing at least one utilization threshold;
 - b. instructions for, for each of a plurality of resources, each resource corresponding to one of the at least one utilization threshold, determining whether a utilization of the resource is above the corresponding utilization threshold; and
 - c. instructions for identifying each resource for which the utilization is above the corresponding utilization threshold.
- 34. A method of monitoring resource utilization within a connection oriented switch, comprising the steps of:
 - a. providing at least one utilization threshold;

- b. for each of a plurality of resources, each resource corresponding to one of the at least one utilization thresholds, determining whether a utilization of the resource is below the corresponding utilization threshold; and
 - c. identifying each resource for which the utilization is below the corresponding utilization threshold.
- 35. The method of claim 34 further comprising the steps of:
 - a. generating a report including any identified resources; and
 - b. presenting the report to an operator.
- 36. The method of claim 35 wherein the step of providing at least one utilization threshold comprises receiving at least one utilization threshold from an operator.
- 37. The method of claim 36 further comprising the step of providing a list of resources, and wherein the step of determining whether a utilization of a resource is below the corresponding utilization threshold is carried out only with respect to resources within the list of resources.
- 38. The method of claim 37 wherein the step of generating a report further comprises including the utilization of any identified resources in the report.
- 39. A processor for monitoring resource utilization within a connection oriented switch, comprising:
 - a. instructions for providing at least one utilization threshold;
 - b. instructions for, for each of a plurality of resources, each resource corresponding to one of the at least one utilization threshold, determining whether a utilization of the resource is below the corresponding utilization threshold; and

- c. instructions for identifying each resource for which the utilization is below the corresponding utilization threshold.
- 40. The processor of claim 39 further comprising:
 - a. instructions for generating a report including any identified resources; and
 - b. instructions for presenting the report to an operator.
- 41. The processor of claim 40 wherein the instructions for providing at least one utilization threshold comprise instructions for receiving at least one utilization threshold from an operator.
- 42. The processor of claim 41 further comprising instructions for providing a list of resources, and wherein the instructions for determining whether a utilization of a resource is below the corresponding utilization threshold are executed only with respect to resources within the list of resources.
- 43. The processor of claim 42 wherein the instructions for generating a report further comprise instructions for including the utilization of any identified resources in the report.
- 44. A computer-readable medium comprising instructions for monitoring resource utilization within a connection oriented switch, comprising:
 - a. instructions for providing at least one utilization threshold;
 - b. instructions for, for each of a plurality of resources, each resource corresponding to one of the at least one utilization threshold, determining whether a utilization of the resource is below the utilization threshold; and
 - c. instructions for identifying each resource for which the utilization is below the specified threshold.